

## Claims

1. An optical transmitter comprising:
  - a differential encoder having first and second outputs, the first and
  - 5 second outputs being of opposite polarity to one another,
  - a first RZ converter connected to the first output of the differential encoder and a second RZ converter connected to the second output of the differential encoder; and
  - a dual electrode Mach Zehnder modulator to which an unmodulated
  - 10 coherent light source is coupled, wherein the output of the first RZ converter is connected to a first electrode of the Mach Zehnder modulator and the output of the second RZ converter is connected to a second electrode of the Mach Zehnder modulator.
- 15 2. A transmitter according to claim 1, further including inverting RZ drivers to convert RZ signals output from the RZ converters to inverted RZ signals.
3. A transmitter according to claim 1 or 2, wherein one of the RZ converter outputs can be delayed by adjusting the phase of a clock signal input to the RZ
- 20 converter.
4. A method of encoding data as a differential phase shift keyed RZ optical signal comprising the steps of:
  - differentially encoding the data to produce two data streams of opposite
  - 25 polarity;
  - converting each data stream to RZ signal format; and
  - driving a first electrode of a dual electrode Mach Zehnder modulator to
  - which an unmodulated coherent light source is coupled with a first of the two
  - data streams and driving a second electrode of the dual electrode Mach
  - 30 Zehnder modulator with a second of the two data streams.

5. A method according to claim 4, wherein the RZ data streams are inverted RZ data streams.